

ECONOMIC IMPACT REPORT SVG-RENNESØY, TEL-RJUKAN AND OSL-ENEBAKK





Three economic impact reports

- Commissioned by Green Mountain, Menon Economics has analyzed the economic impact of the construction and operation of three data centers: Rennesøy, Rjukan, and Enebakk.
- The analysis is based on actual investment and operating costs provided by Green Mountain, which makes the analysis highly precise.
- We have also analyzed the consumption effects and total tax contributions generated by Green Mountain and its employees. In addition, we have examined Green Mountain's broader social impacts on the municipalities surrounding the data centers.
- This document provides a summary of the key findings from the three analyses in an aggregated format.
- For more information, please download the reports in the box to the right.

REPORT SERIES



Menon Economics (2024). Economic Impact Report -Green Mountain's data center at Rennesøy. Available <u>here</u>.

Menon Economics (2024). Economic Impact Report -Green Mountain's data center at Rjukan. Available <u>here</u>.

Menon Economics (2025). Economic Impact Report -Green Mountain's data center at Enebakk. Available <u>here</u>.



Background on the Data Center Industry

- The data center industry has undergone significant changes in recent decades. Previously, data centers
 were small and centralized, but with the rise of Cloud Computing, Big Data, and AI, data centers have
 grown substantially. Large technology companies are now investing in larger facilities, and data centers
 are considered critical infrastructure. In Norway, Green Mountain is subject to the Security Act.
- The data center industry has a relatively high energy consumption, which is why there is a strong focus on renewable energy to ensure climate-friendly operations. This contributes to making Norway an attractive location, with abundant access to clean energy and a cool climate that reduces the need for cooling.
- **Power availability is a critical factor for data center operators globally,** with waiting times of 2–3 years to connect new capacity. Norway, with ample access to power, can therefore attract additional investments. At the same time, available capacity in global data centers is shrinking due to high demand, with vacancy rates as low as 1 percent in some locations. As shown in the figure to the right, demand for data center services is expected to grow significantly in the coming years.
- To meet this development, the Norwegian government has outlined a strategy toward 2030 to facilitate data centers that contribute to value creation while safeguarding Norwegian interests.² The government aims to support the use of renewable energy and ensure that data centers contribute both to economic growth and climate goals through more circular use of energy, such as reuse of excess heat.



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^{1:} Al is poised to drive 160% increase in data center power demand | Goldman Sachs

^{2:} The digital future of Norway – National Digitalization Strategy 2024-2030 (regjeringen.no)



Key facts – The three data centers

	SVG-Rennesøy	TEL-Rjukan	OSL-Enebakk
Current power capacity:	16.5 MW	6.7 MW	26.8 MW
Expected expansion:	Up to 29 MW in 2029	Up to 43.7 MW in 2025	Up to 41.8 MW in 2025 and up to 93 MW in 2029
Site size:	144 700 m ²	29 000 m ²	81 205 m ²
Data Centers Space:	10 711 m ²	6 650 m ²	12 315 m ²
Number of data center buildings:	6 data halls, three of which are two-storey	5	5
Power lines:	3	2	2
Standard:	Tier III ¹	Tier I and Tier III ¹	Built according to Tier III specifications ^{1,2}
Security:	24/7 security personnel	24/7 security personnel	24/7 security personnel
Cooling:	Fjord cooling solution	Combination of air and water cooling	Air-to-air with adiabatic and chilled water cooling
Employees:	117 individuals have the data center as their regular place of work ³	77 individuals have the data center as their regular place of work ³	98 individuals have the data center as their regular place of work ³ In 2025, Green Mountain expects to increase the number of permanent staff at OSL-Enebakk to 133. ³

1: More information about the Tier-system can be found <u>her</u>e.

2: The building is not yet Tier III certified.

3: This includes permanent Green Mountain employees, contracted personnel hired by Green Mountain, as well as customers' employees based at the data center. The 2025 figure is based on all signed agreements as of the end of 2024.



Value Added



The three data centers have supported value added amounting to 5.6 billion NOK

- Green Mountain's activities at the three data centers have collectively supported NOK 5.6 billion in Norwegian value added.¹ This includes both direct effects from the data centers and indirect effects further up the value chain.
- Approximately 45 percent of this value added has occurred in the local municipalities, amounting to a total of around NOK 2.5 billion over the past 14 years.
- The local value added has taken place in municipalities such as (former) Rennesøy, Tinn, and Enebakk. In these areas, Green Mountain's contribution represents a significant share of total municipal value added.

Figure B: Total value added effects of SVG-Rennesøy, TEL-Rjukan, and OSL-Enebakk since establishment. Source: Menon Economics



^{1:} This is the added value generated by a company. It is measured as the company's operating profit before depreciation and amortization (EBITDA) plus its wage costs. Value added is an important concept in economics, as it forms the basis for welfare through consumption and taxation.



OSL-Enebakk and SVG-Rennesøy have generated the greatest valueadded effects

- This page shows how the value-added results are distributed across the three data centers. The figures include value-added effects from both operations and investments and cover the entire period.
- **SVG-Rennesøy** accounted for 42 percent of the total value-added effects. This corresponds to NOK 2.3 billion in value added.
- TEL-Rjukan accounted for 15 percent of the total value-added effects. This corresponds to approximately NOK 900 million in value added.
- **OSL-Enebakk** accounted for 43 percent of the total value-added effects. This corresponds to approximately NOK 2.4 billion in value added.
- **OSL-Enebakk** was the last to become operational but has nevertheless supported for the largest value-added effects. This means that the annual value-added effects from OSL-Enebakk were clearly the highest.

Figure C: Total value-added effects of SVG-Rennesøy, TEL-Rjukan, and OSL-Enebakk, broken down by data center. Source: Menon Economics





The value-added effects reached NOK 1.5 billion in 2023 and are expected to increase

- The economic impact effects from all three data centers peaked around 2023, with NOK 1.5 billion in value added supported in Norway that year. There was a slight decline in activity in 2024, but it remained clearly the second highest year in terms of economic activity.
- From 2019 onward, economic impact effects increased significantly due to major construction activity at all three data centers, which generated substantial economic activity in the construction sector. Construction has accounted for approximately 60 percent of the total value-added effects.
- Although construction has dominated the economic impact effects so far, the importance of operational economic impact effects has grown in recent years. It is also expected that the contribution from operations will continue to increase going forward.
- Activity is projected to increase in 2025 and in the following years, in connection with expansions at all three data centers.







More than two-thirds of the value-added effects are indirect effects

- Approximately 70 percent of the value-added effects are indirect effects. These are effects that have occurred further up the supply chain of Green Mountain. The remaining roughly 30 percent of the value-added effects are direct effects.
- Green Mountain's direct value added amounts to around NOK 1.8 billion in total across the entire period and all data centers.
- The indirect value-added effects have largely arisen in the construction industry as a result of data center development.
- The direct effects are solely related to value added from the operation of the data centers themselves, meaning the sum of wage expenses and operating surplus from the three data centers.

Figure E: Total value-added effects from SVG-Rennesøy, TEL-Rjukan, and OSL-Enebakk broken down by direct and indirect effects. Source: Menon Economics





Consumption by employed individuals has also contributed to significant value-added effects

- The local consumption of employees has resulted in valueadded effects of an additional NOK 200 million in the local municipalities.
- These effects arise when employees receive wages, pay taxes, and consume goods and services, which in turn generate revenue, value added, and employment for local businesses such as grocery stores, dental clinics, and real estate companies.
- Previously, SVG-Rennesøy accounted for the majority of the consumption effects, but in 2024, OSL-Enebakk has taken the lead, generating the largest value-added effects related to employees' local consumption.
- An expansion of the data centers is also expected to increase employee consumption effects in the coming years.

Figure F: Total value-added effects from employee consumption at SVG-Rennesøy, TEL-Rjukan, and OSL-Enebakk. Source: Menon Economics



* We have not estimated consumption effects for TEL-Rjukan in 2024 due to a lack of data at the time of analysis.



The total value added supported by the three data centers amounts to NOK 3.3 million per GWh

- The three data centers combined have on average supported NOK 3.3 million in value added per GWh of electricity consumption in the period from 2016 to 2024.
- SVG-Rennesøy has had the highest value-added effects per GWh of electricity consumption, with economic impact effects averaging around NOK 4.2 million per GWh from 2016 to 2024. TEL-Rjukan has had the second highest value-added effects relative to electricity use, with approximately NOK 3.1 million per GWh in the same period. OSL-Enebakk has generated value-added effects of around NOK 1.8 million per GWh of electricity use since its establishment.
- SVG-Rennesøy and TEL-Rjukan have had significantly higher economic impact effects per GWh than other large-scale data centers, whereas OSL-Enebakk has had economic impact effects per GWh roughly on par with other large-scale data centers.
- All three data centers have had substantially higher value-added effects per GWh than traditional power-intensive industries, ranging from double the impact (OSL-Enebakk) to more than four times as much (SVG-Rennesøy).

Figure G: Value-added effects per GWh for SVG-Rennesøy, TEL-Rjukan, and OSL-Enebakk, large-scale data centers, and traditional power-intensive industries. Source: Menon Economics



1: Menon has previously calculated value added relative to power consumption for large-scale data centers and traditional power-intensive industries. See Menon publication No. 37/2021



Employment Effects



The three data centers have supported 3,600 FTEs

- Green Mountain's activities at the three data centers have collectively supported employment¹ equivalent to 3,600 fulltime equivalents (FTEs) in Norway. In line with the value-added effects, this includes both direct effects from the data centers and indirect effects further up the value chain. It also includes employees of clients and contracted personnel with permanent positions at the data centers.
- Approximately half of the employment effects have occurred in the local municipalities. This corresponds to around 1,700 FTEs over the past 14 years.
- The local employment has taken place in municipalities such as (former) Rennesøy, Tinn, and Enebakk. In these areas, Green Mountain's contribution represents a significant share of total local employment.



Figure H: Total employment effects of SVG-Rennesøy, TEL-Rjukan, and OSL-Enebakk since start-up. Source: Menon Economics

1: Number of employees refers to the number of jobs registered, regardless of whether they are full-time or part-time. Since this number does not account for how much each person works, we adjust for this by using full-time equivalents (FTEs) as a measure of employment effects. FTEs are based on the number of employed people but multiplied by the average share of a full-time position worked during a year.



Largest employment effects in SVG-Rennesøy and OSL-Enebakk

- This page shows how the employment results are distributed across the three data centers. The figures include employment effects from both operations and investments and span the entire period.
- **SVG-Rennesøy** accounted for 44 percent of all employment effects. This corresponds to 1,600 full-time equivalents (FTEs).
- **TEL-Rjukan** accounted for 20 percent of all employment effects. This corresponds to around 700 FTEs.
- **OSL-Enebakk** accounted for just over one third of all employment effects. This corresponds to around 1,300 FTEs.
- SVG-Rennesøy has been in operation the longest and has therefore supported high employment numbers throughout the period.
 However, OSL-Enebakk has had the highest annual employment effects since its establishment.

Figure I: Total employment effects of SVG-Rennesøy, TEL-Rjukan, and OSL-Enebakk distributed by data center. Source: Menon Economics





Employment effects reached 800 FTEs in 2023 and are expected to increase

- The effects associated with all three data centers peaked around 2023, with over 800 full-time equivalents (FTEs) supported in Norway that year. The number is slightly lower in 2024, but still clearly the second highest year in terms of employment effects.
- Extensive construction activity at all three data centers from 2019 onwards significantly increased employment effects. These effects have primarily benefited the construction industry, which received many contracts from Green Mountain. Construction activity has accounted for approximately two-thirds of the employment effects.
- Although construction has so far dominated the employment effects, the importance of employment effects from operations has increased in recent years. Operations have contributed to employment effects totaling more than 1,200 FTEs over the period.
- Activity is expected to increase in the coming years in connection with the expansion of the three data centers.



Figure J: The employment effects of SVG-Rennesøy, TEL-Rjukan, and OSL-Enebakk over time. Source: Menon Economics.



85 percent of the employment effects are indirect effects

- 85 percent of the employment effects are indirect. These effects have occurred further up the supply chain of Green Mountain, as well as from customers placing their employees at the data centers. The remaining 15 percent of the employment effects are direct effects directly related to the operation of the data centers.
- Green Mountain has employed approximately 550 full-time equivalents (FTEs) at the data centers throughout the entire period across the three locations (direct employment). The remaining more than 3,000 FTEs are indirect effects.
- Direct employment includes only Green Mountain's own employees. Hired personnel and customer employees are included in the indirect employment effects.

Figure K: Total employment effects of SVG-Rennesøy, TEL-Rjukan, and OSL-Enebakk broken down by direct and indirect effects. Source: Menon Economics.





Consumption by employed individuals has also contributed to employment effects

- The employees' local spending has resulted in employment effects equivalent to an additional 200 FTEs in the local municipalities.
- These effects arise when employees receive wages, pay taxes, and consume goods and services, which in turn generate revenue, value added, and employment for local businesses such as grocery stores, dental clinics, and real estate companies.
- Previously, SVG-Rennesøy accounted for most of the consumption effects, but in 2024, OSL-Enebakk has taken the lead, generating the highest value-added effects linked to employees' local spending.
- An expansion of the data centers is also expected to increase employees' consumption effects in the coming years.

Figure L: Total employment effects from employee spending at SVG-Rennesøy, TEL-Rjukan, and OSL-Enebakk. Source: Menon Economics.





The three data centers combined have supported 2.1 FTEs per GWh

- The three data centers combined have, on average, had employment effects of 2.1 FTEs per GWh of electricity consumption in the period from 2016 to 2024.
- TEL-Rjukan has had the highest employment effects relative to electricity consumption, with about 2.7 FTEs per GWh from 2016 to 2024. SVG-Rennesøy has had employment effects of approx. 2.1 FTEs per GWh in the period. OSL-Enebakk has had employment effects of about 1.5 FTEs per GWh of electricity consumption since its start.
- All three data centers have had significantly higher employment effects per GWh than other large-scale data centers, with employment effects per GWh being 7 to 14 times higher than those of other large-scale data centers.
- All data centers have also had significantly higher employment effects per GWh than traditional energy-intensive industries, with effects between 60 percent (OSL-Enebakk) and 200 percent (TEL-Rjukan) higher.
- Employment effects per GWh are expected to decrease as the data centers scale up due to economies of scale.

Figure M: Employment effects per GWh for SVG-Rennesøy, TEL-Rjukan, and OSL-Enebakk, large-scale data centers, and traditional energy-intensive industry. Source: Menon Economics.



1: Menon has previously calculated employment relative to electricity consumption for large-scale data centers and traditional energy-intensive industries, respectively. See Menon publication No. 37/2021.

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Tax and Societal effects



The three data centers have contributed a total of NOK 450 million in tax revenues

- The three data centers have together contributed NOK 450 million in tax revenues to the public sector.
- This includes corporate tax, employer's national insurance contributions, and personal income tax. Property tax and wealth tax are not included.
- The majority of the tax payments go to the state via corporate tax, with a contribution from Green Mountain of approximately NOK 370 million.
- A smaller share goes to the county and host municipalities. The host municipalities have received about NOK 70 million in tax revenues related to Green Mountain's data centers.
- A significant portion of the tax paid to the state is returned to the municipalities through direct transfers, which are determined by the municipalities' tax revenues and population size. These transfers are not included in the "Municipal Taxes" figure.



Figure N: Tax effects related to the operations of SVG-Rennesøy, TEL-Rjukan, and OSL-Enebakk. Source: Menon Economics



Data centers require a wide range of skill profiles

• Uptime is essential for data centers, which is why operations technicians make up the largest group of employees.

They are educated in disciplines such as electrical, mechanics, automation, computer electronics, and cooling technology. They are responsible for managing system alarms, monitoring operations, running tests, and performing maintenance on equipment. Along with security personnel, many of them work in shifts to ensure the site is staffed 24/7. Administrative expertise is also required to manage leadership, project management, support functions, and regulatory compliance.

• Green Mountain has a specialized competence profile tailored to the needs of a high-tech data center.

On average, Green Mountain's workforce has significantly higher education (defined as short and long university degrees) than the general workforce in the surrounding municipalities. This difference in skill level is also reflected in wage levels. At the same time, it's important to note that the data center requires a broad range of job profiles—from security and cleaning staff requiring less formal education, to positions that demand university degrees.

• To meet future challenges and technological demands, access to talent is crucial for Green Mountain.

With low unemployment rates in the regions, the company must attract qualified professionals. This not only strengthens the company's ability to operate efficiently and innovatively but also contributes to local development by creating attractive jobs with relatively high wages. High-skilled jobs can stimulate economic growth, improve local living standards, and make the region more appealing to both new residents and investors.



Data centers have several important societal impacts in their local communities







ECONOMIC IMPACT - SVG-RENNESØY, TEL-RJUKAN AND OSL-ENEBAKK